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PN - JP2002158465 A 20020531
 TI - LAMP AND PRINTED BOARD
 FI - H05K7/12&V ; H05K1/18&U ; H01L33/00&H
 PA - KENWOOD CORP
 IN - KIN TAIWA
 AP - JP20000350002 20001116
 PR - JP20000350002 20001116
 DT - I

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AN - 2002-486688 [52]
 TI - Lamp has terminals electrically connected to portion which opposes with mounting surface of PCB during clamping with PCB
 AB - JP2002158465 NOVELTY - A support (20) has an engaging portion for clamping to the printed circuit board (PCB) when the support is inserted into the passing through-hole formed in PCB. The terminals (30,31) are electrically connected to the portion which opposes with the mounting surface of the PCB, during clamping with the PCB.
 - DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for printed circuit board
 - USE - Lamp e.g. LED.
 - ADVANTAGE - The soldering reliability is improved, thus lamp is mounted reliably on PCB
 - DESCRIPTION OF DRAWING(S) - The figure shows the bottom plan, side and top elevation views of the structure of lamp. (Drawing includes non-English language text).
 - Support 20
 - Terminals 30,31
 - (Dwg. 1/4)
 IW - LAMP TERMINAL ELECTRIC CONNECT PORTION OPPOSED MOUNT SURFACE PCB CLAMP PCB
 PN - JP2002158465 A 20020531 DW200252 H05K7/12 005pp
 IC - H01L33/00 ;H05K1/18 ;H05K7/12
 MC - U12-A01A4 V04-B01 V04-Q02A V04-Q05 V04-T01C
 DC - U12 V04
 PA - (TRIR) KENWOOD CORP
 AP - JP20000350002 20001116
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PN - JP2002158465 A 20020531
 TI - LAMP AND PRINTED BOARD
 AB - PROBLEM TO BE SOLVED: To significantly improve the reliability of the soldered spots of a lamp mounted on a printed board and at the same time, to make the lamp cope also

with machine mounting.

- SOLUTION: The lamp 1 is integrally constituted by using an LED body 10, a pedestal 20 holding the main body 10, terminal sections 30 and 31 which supply electric power required by the main body 10 for emitting light, etc., as main constituents. The terminal sections 30 and 31 are exposed on the portions of the pedestal 20 facing lands 42.

I - H05K7/12 ;H01L33/00 ;H05K1/18

PA - KENWOOD CORP

IN - KIN TAIWA

ABD - 20020904

ABV - 200209

AP - JP20000350002 20001116

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the lamp and printed circuit board which are mounted in a printed circuit board.

[0002]

[Description of the Prior Art] As conventionally shown in drawing 4, as for the lamp 200 (for example, Light Emitting Diode) mounted in a substrate 100, lead wire 203 was prolonged from the rubber screen 202 holding the Light Emitting Diode main part 201. And the attaching hole 101 of a bore smaller than the size of a rubber screen 202 is formed in a substrate 100, and a lamp 200 is inserted in an attaching hole 101 from a flow DIP side side. It is fixed where a rubber screen 202 is compressed a little into an attaching hole 101, and a lamp 200 is attached in a substrate 100 with the elasticity of a rubber screen 202. And by flow DIP, the simultaneously nose of cam of lead wire 203 was soldered to the land 102, and the lamp 200 was mounted in the substrate 100.

[0003]

[Problem(s) to be Solved by the Invention] However, with the conventional lamp 200, since the lead wire 203 which extends from a rubber screen 202 had "play", it was easy to produce dispersion which solders lead wire 203 to a land 102, and there was a case where it became trouble for positive soldering.

[0004] Moreover, since a rubber screen 202 served as a large size from the bore of an attaching hole 101, when inserting a rubber screen 202 in an attaching hole 101, a certain amount of load was applied, and mounting by the machine was difficult. For this reason, the lamp 200 was attached by the manual insertion by the operator, and much time and effort was required.

[0005] Moreover, when there was what has weak compression for size dispersion of a rubber screen 202, there was a case where a lamp 200 was missing from an attaching hole 101. Furthermore, if a lamp 200 opposes and it returns to a flow DIP side side slightly for the elasticity of a rubber screen 202, lead wire 203 will float from a land 102. For this reason, non-solder arose, or a defect, like solder separates arose, and there was a case where it became trouble for positive soldering.

[0006] In lamps, such as Light Emitting Diode mounted in a printed circuit board, the technical problem of this invention is making it correspond also to machine mounting while raising the reliability of soldering sharply.

[0007]

[Means for Solving the Problem] In order to solve the above technical problem, invention according to claim 1 For example, as shown in drawing 1 and 2, the main part of a lamp (for example, Light Emitting Diode main part 10) is held. the insertion formed in the printed circuit board 40 -- it is inserted in a hole (for example, attaching hole 41) -- an attachment component It is the lamp 1 which is equipped with (for example, the plinth 20) and is mounted in the aforementioned printed circuit board. the aforementioned attachment component the aforementioned insertion -- when inserted in a hole, it stops to the aforementioned printed circuit board -- the stop section It has (for example, the plinth 20) and is characterized by forming the terminal areas 30 and 31 electrically connected with the aforementioned printed circuit board in the portion which counters with the component side (for example, land 42) of the aforementioned printed circuit board at the time of a stop.

[0008] According to invention according to claim 1, the terminal area electrically connected with the component side of a printed circuit board is formed in the portion which an attachment component counters with the component side of a printed circuit board. Thereby, if the lamp of this invention is inserted in the attaching hole of a printed circuit board, the component side and terminal area of the printed circuit board used as the part to solder will be in the state of contacting certainly. Thus, since the part to solder contacts certainly, the reliability of soldering can be raised sharply.

[0009] Furthermore, since the part to solder contacts certainly, an attaching hole with the bore of sufficient size is prepared in a substrate, and it can respond also to machine mounting easily by lessening the load which inserts a lamp in an attaching hole. In addition, while preventing that a lamp is missing from an attaching hole in this case, in order to maintain the state where the part to solder contacts, it is desirable to use together bond attachment by automatic solder etc.

[0010] Invention according to claim 2 is characterized by being the printed circuit board in which the lamp according to claim 1 is mounted.

[0011] According to invention according to claim 2, while being able to do so the same effect as a claim 1, the printed circuit board in which does not have poor soldering and the lamp was mounted with high reliability can be obtained.

[0012]

[Embodiments of the Invention] Hereafter, with reference to drawing 1 -3, the lamp 1 of the form of operation of this

invention is explained in detail. The lamp 1 of the form of this operation is constituted by the subject at one in the Light Emitting Diode main part 10 (main part of a lamp), the plinth 20 (attachment component) holding the Light Emitting Diode main part 10, the terminal areas 30 and 31 that supply the power for the Light Emitting Diode main part 10 emitting light, as shown in drawing 1. In addition, drawing 1 (b) shows a plinth 20 and terminal areas 30 and 31 with the cross section seen from [which is shown in drawing 1 (a)] A-A, and shows the side elevation only about the left Light Emitting Diode main part 10 from the center.

[0013] A plinth 20 holds the Light Emitting Diode main part 10 to one in the center section, as shown in the plan of drawing 1 (a). Moreover, as shown in the bottom plan view of drawing 1 (c), the center section holding the Light Emitting Diode main part 10 curves circularly, and a plinth 20 projects to the side, and is prepared in the shape of a simultaneously rectangular parallelepiped the bottom.

[0014] Terminal areas 30 and 31 are formed in one pair of right and left, and the part exposes them to the upper surface and the inferior surface of tongue of a plinth 20. That is, as shown in drawing 1 (a), it extends in the longitudinal direction of the abbreviation rectangular parallelepiped-like plinth 20, and the top outcrops 30a and 31a which are a part of terminal areas 30 and 31 are exposed to the upper surface of a portion where a plinth 20 projects from the Light Emitting Diode main part 10. As shown in drawing 1 (c), it extends in the longitudinal direction of a plinth 20, and the bottom outcrops 30b and 31b which are a part of terminal areas 30 and 31 are exposed to the inferior surface of tongue of a plinth 20. From the upper surface and the inferior surface of tongue of a plinth 20, by predetermined size within the limits, the top outcrops 30a and 31a and the bottom outcrops 30b and 31b were projected slightly, and are exposed, respectively. Although top outcrop 30a, bottom outcrop 30b and top outcrop 31a, and bottom outcrop 31b do not carry out illustration, they are constituted from the plinth 20 interior by one, respectively, and have a flow mutually. Moreover, it is considered that the position which the top outcrops 30a and 31a and the bottom outcrops 30b and 31b expose counters the position of the land 42 (it illustrates to a component side and drawing 2 (a)) used as the part to solder.

[0015] Next, how to carry out machine mounting of the lamp 1 of the gestalt of operation of this invention at a printed circuit board 40 is explained. In the following explanation, it solders by flow DIP and the case where machine mounting of the lamp 1 is carried out at a printed circuit board 40 is illustrated. It is the outer diameter R1 (it illustrates to drawing 1 (b)) of the lower part of the Light Emitting Diode main part 10, and more than equivalent, and the bore r of the attaching hole 41 by which machine mounting of introduction and the lamp 1 is carried out is formed in the predetermined size smaller than the size R2 (it illustrates to drawing 1 (b)) of the longitudinal direction of a plinth 20, as shown in drawing 2 (a). That is, a plinth 20 is considered as the composition stopped to a printed circuit board 40 at the time of mounting to the printed circuit board 40 of a lamp 1. The land 42 used as the part soldered to the position around an attaching hole 41 is formed. And a lamp 1 is inserted in an attaching hole 41 from a flow DIP side side by the well-known machine so that the nose of cam of the Light Emitting Diode main part 10 may go to an attaching hole 41 ("machine ****" is called below). Here, since it is set up as the bore r of an attaching hole 41 is a ****, it can insert smoothly, without being accompanied by the big load on the occasion of insertion of a lamp 1. The nose of cam of the Light Emitting Diode main part 10 projects a lamp 1 to a flow DIP side [of a substrate 40], and opposite side, and it is inserted in the state where the upper surface of the plinth 20 (stopping portion) of the portion which does not penetrate an attaching hole 41 approaches or contacts a flow DIP side. Thus, if a lamp 1 is inserted in an attaching hole 41, since the top outcrops 30a and 31a which are a part of terminal areas 30 and 31 will be exposed to the upper surface of the plinth 20 which a plinth 20 stops to a printed circuit board 40, and does not penetrate an attaching hole 41, the top outcrops 30a and 31a and a land 42 will be in the state of contacting certainly. Thus, since it can solder in the state where it contacted certainly, a defect, like non-solder and solder separate is prevented and the reliability of soldering is raised sharply.

[0016] Moreover, the portion into which a plinth 20 does not penetrate an attaching hole 41 as shown in drawing 2 (c) and the field P where a printed circuit board 40 and ** contact (except for the portion of a land 42) The according to automatic solder to plinth 20 bond according to illustration with slash to drawing 2 (c) attachment section 43 is formed. Thereby, the lamp 1 inserted in the attaching hole 41 can prevent that it is missing from a printed circuit board 40. Moreover, it can prevent that top outcrop 30a which is a part of terminal area 30 floats from a land 42. Therefore, the reliability of soldering is raised sharply. In addition, as for the bond attachment section 43, it is desirable to prepare in one or more points with arbitrary Field P. The top outcrops 30a and 31a and a land 42 are soldered by flow DIP in this state. By the above, machine mounting of the lamp 1 of the gestalt of this operation can be carried out at a printed circuit board 40.

[0017] In addition, after carrying out machine **** of the lamp 1 at an attaching hole 41 instead of performing bond attachment by automatic solder to a plinth 20, you may arrange arbitrary parts so that the portion of the plinth 20 which projects in the flow DIP side side of a printed circuit board 40 may be overlapped. That is, as shown in drawing 3 (a), after carrying out machine **** of the lamp 1, a chip resistor 44 is arranged so that it may extend to a plinth 20. In this case, it is the portion with which a chip resistor 44 and a plinth 20 lap mutually, and a lamp 1 is supported from a flow DIP side side. While being able to prevent by this that a lamp 1 is missing from a printed circuit board 40, without requiring bond attachment by automatic solder, it can prevent that top outcrop 30a floats from a land 42. Moreover, the same effect is acquired even if it arranges jumper wire 45 so that a plinth 20 may be crossed after carrying out machine **** of the lamp 1 as shown in drawing 3 (b). Furthermore, it may replace with a chip resistor 44 or jumper wire 45, and you may arrange so that a plinth 20 may be supported by the lead wire (not shown) of parts which are different in a lamp 1 etc. from a flow DIP side side.

[0018] Although the case where machine mounting of the lamp 1 was carried out by flow DIP at a printed circuit board 40 was illustrated in the above explanation, the bottom outcrops 30b and 31b which are a part of terminal areas 30 and 31 have exposed the lamp 1 of the gestalt of this operation to the inferior surface of tongue of a plinth 20. Therefore, the surface mount which alignment of the lamp 1 is carried out above a land (not shown), and this land (not shown) and the

bottom outcrops 30b and 31b exposed to the inferior surface of tongue of a lamp 1 are contacted, and is soldered by the well-known method is also possible.

[0019] According to the lamp 1 of the gestalt of operation of the above this invention, terminal areas 30 and 31 are provided in the upper surface and the inferior surface of tongue of a plinth 20 fixed to the plinth 20 so that the top outcrops 30a and 31a and the bottom outcrops 30b and 31b may be exposed. Thereby, like the conventional lamp 200 (refer to drawing 4), there is no solder dispersion based on "play" of the lead wire 203 which extends from a rubber screen 202, the reliability of soldering is improved sharply, and a lamp 1 can be mounted in a printed circuit board 40.

[0020] In addition, this invention is not limited to the gestalt of the above-mentioned implementation. For example, although bond attachment by automatic solder was performed to the plinth 20 with the gestalt of this operation after carrying out machine **** of the lamp 1, it may replace with bond attachment by automatic solder, and the adhesives of the common knowledge which carries out temporary fixation of the chip at a substrate may be used. Moreover, you may use together and use bond attachment by automatic solder, and well-known adhesives. Here, as well-known adhesives, heat-hardened type adhesives etc. are raised, for example. In addition, of course in the range which does not deviate from the meaning of this invention, it can change suitably.

[0021]

[Effect of the Invention] According to invention according to claim 1, the component side and terminal area of a printed circuit board will be in the state of contacting certainly, and can raise the reliability of soldering sharply. For this reason, it can respond also to machine mounting easily by preparing an attaching hole with the bore of sufficient size in a substrate.

[0022] According to invention according to claim 2, while being able to do so the same effect as a claim 1, the printed circuit board in which does not have poor soldering and the lamp was mounted with high reliability can be obtained.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] the insertion which held the main part of a lamp and was formed in a printed circuit board -- the lamp which has the attachment component inserted in a hole and is mounted in the aforementioned printed circuit board -- it is -- the aforementioned attachment component -- the aforementioned insertion -- the lamp characterized by to be formed the terminal area electrically connected with the aforementioned printed circuit board in the portion which is equipped with the stop section stopped to the aforementioned printed circuit board when inserted in a hole, and counters with the component side of the aforementioned printed circuit board at the time of a stop

[Claim 2] The printed circuit board characterized by mounting the lamp according to claim 1.

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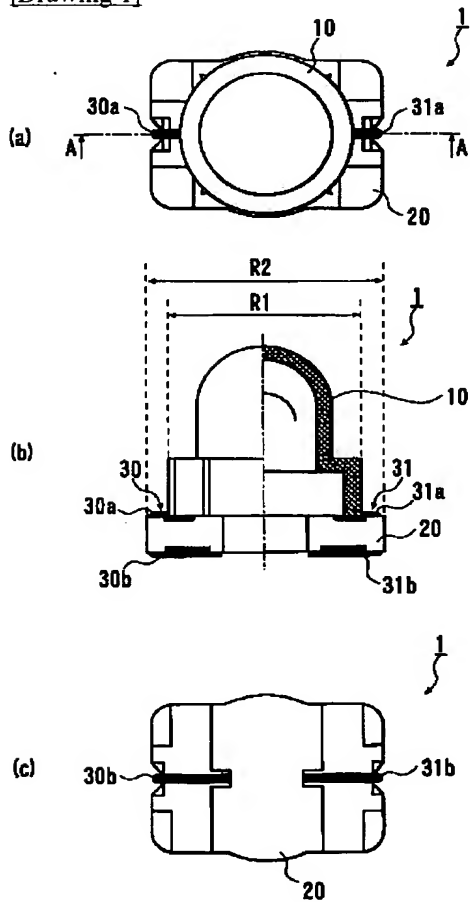
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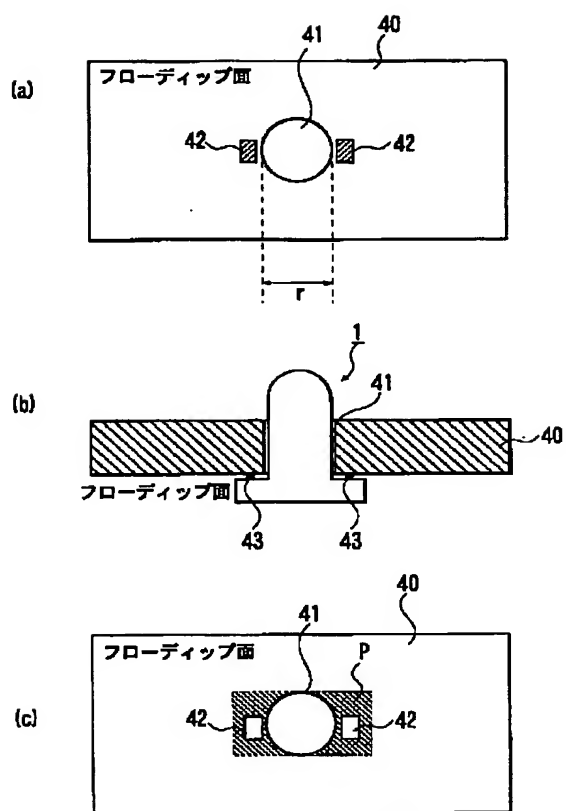
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DRAWINGS

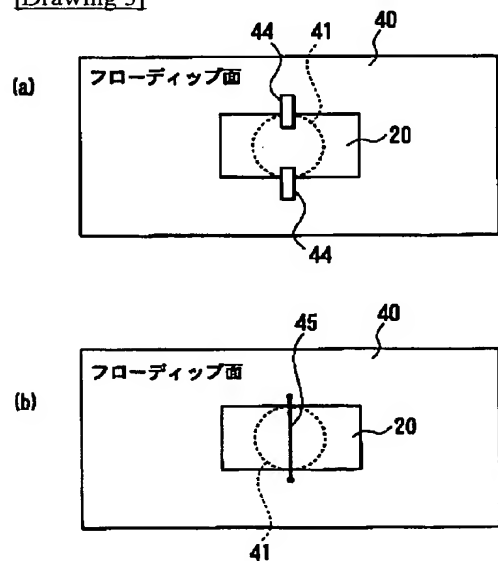
[Drawing 1]



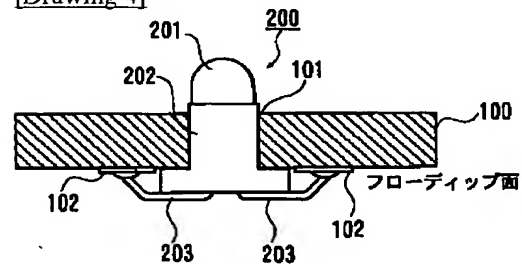
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]